BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Reliability and Continuity of Communications Networks, Including Broadband Technologies	)	PS Docket No. 11-60
	)	
Effects on Broadband Communications Networks of Damage or Failure of Network Equipment or Severe Overload	)	PS Docket No. 10-92
	)	
Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks	)	EB Docket No. 06-119

To: The Commission

REPLY COMMENTS OF SOUTHERN COMPANY SERVICES, INC.

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Dated: September 1, 2011

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REPLY COMMENTS OF SOUTHERN COMPANY SERVICES, INC.

Southern Company Services, Inc. ("Southern"), on behalf of itself and its operating affiliates, hereby submits its reply comments in response to the Federal Communications Commission's Notice of Inquiry regarding the reliability and continuity of our Nation's communications infrastructure, including broadband networks.[1] Southern appreciates the opportunity to provide the Commission with information responsive to its inquiry and to respond to initial comments filed in this proceeding.

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[1] / *Reliability and Continuity of Communications Networks, Including Broadband Technologies, Effects on Broadband Communications Networks of Damage or Failure of Network Equipment or Severe Overload, Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, PS Docket No. 11-60, PS Docket No. 10-92, EB Docket No. 06-119, Notice of Inquiry, FCC 11-55 (rel. April 7, 2011) ("*Notice of Inquiry*" or "*NOI*").

I. INTRODUCTION AND SUMMARY

Southern is a wholly-owned subsidiary service company of Southern Company, a super-regional energy company in the Southeast United States. Southern Company also owns four electric utility subsidiaries – Alabama Power Company, Georgia Power Company, Gulf Power Company, and Mississippi Power Company – which provide retail and wholesale electric service throughout a 120,000 square mile service territory in Georgia, most of Alabama, and parts of Florida and Mississippi. Southern is obligated to its employees and to the general public to conduct its operations in a safe manner and to maintain the reliability of its utility services. Members of the Southern Company family use a variety of communications technologies to support the safe and efficient delivery of energy services to their customers.

As discussed in these reply comments, Southern remains concerned that commercial networks are not sufficiently reliable to handle the demands of mission-critical utility communications. In particular, Southern agrees with the Edison Electric Institute ("EEI") that commercial communications networks face four principal impediments to reliability: (1) a lack of adequate primary and backup power; (2) a lack of redundancy in hardware and switches; (3) insufficient network capacity and oversubscription; and (4) the inability to restore failed services in a manner timely enough to meet utilities' operational needs.

Accordingly, Southern urges the Commission to ensure that utilities' communications options remain as broad as possible and to avoid taking any action in this or any other proceeding that may inhibit or restrict the ability of electric utilities to continue to rely on private networks for their critical communications needs. Southern also urges the Commission to continue to promote the development and deployment of utility communications systems by

providing utilities access to spectrum, while also continuing to promote improvements in the reliability and survivability of commercial communications networks.

II. CONCERNS ABOUT THE RELIABILITY AND CONTINUITY OF COMMERCIAL NETWORKS

As in the Commission's previous inquiry on the survivability of broadband communications networks,[2] commercial operators speak favorably about the reliability of their commercial networks and give sweeping assurances about their networks' ability to provide continuity of service. Southern agrees with EEI, however, that while commercial systems may be well-built and are generally sufficient to meet the needs of most consumers, they nevertheless fall short of meeting electric utilities' mission-critical communications needs.[3]

As explained in the initial comments filed in this proceeding by EEI, the Utilities Telecom Council ("UTC"), and Oncor – and as Southern has discussed in other proceedings[4] – utilities have far more demanding needs for reliability, survivability, and continuity of service than those typically required by the customers of commercial operators. Southern and other utilities typically design key communications systems to a reliability standard of 99.999 percent in order to ensure the safe, reliable, and efficient delivery of essential electric power to the public. In addition to Smart Grid applications,[5] utilities require reliable and dependable communications for all aspects of their operations – including communications with field crews

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[2] / *Effects on Broadband Communications Networks of Damage or Failure of Network Equipment or Severe Overload*, PS Docket No. 10-92, Notice of Inquiry, 25 FCC Rcd 4333 (2010) ("*Survivability Notice*").

[3] / Comments of EEI at 2.

[4] / *See, e.g.*, Reply Comments of Southern Company on the *Survivability Notice* (filed Sept. 3, 2010); Comments of Southern Company on the National Broadband Plan Public Notice #2, GN Docket No. 09-51 (filed Oct. 2, 2009).

[5] / *See NOI* at ¶ 4.

carrying out construction, maintenance, or repair work on grid infrastructure; monitoring and control over grid infrastructure; and communications with generating plants, transmission operators, neighboring utilities, etc. – not only on a routine operational basis but especially in times of crisis or emergency, such as storms and other natural or man-made disasters.

Southern remains concerned that commercial networks are not sufficiently reliable to handle the demands of mission-critical utility communications. Southern agrees with EEI's observation that commercial communications networks face four principal impediments to reliability:

(1) Lack of adequate primary and backup power;

(2) Lack of redundancy in hardware and switches;

(3) Insufficient network capacity and oversubscription; and

(4) The inability to restore failed services in a manner timely enough to meet utilities' operational needs.[6]

After reviewing the comments submitted in this proceeding, Southern is especially concerned that commercial operators continue to either refuse to acknowledge or to outright deny that the shortcomings identified by EEI, UTC, and other utility commenters are issues that must be addressed, particularly if commercial networks are to be used in support of critical utility communications.

A. Backup Power

The Commission recognizes that lack of backup power is a leading factor affecting the ability of communications providers to continue operation during major emergencies and has

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[6] / Comments of EEI at 5 – 6.

therefore sought comment on how the problem of backup power should be addressed, whether by regulation or through other means.[7] Commercial operators have responded by insisting that there is no need for regulation because, in their view, competitive market forces provide them with sufficient incentive to make their networks reliable.[8] According to AT&T, "The Commission can provide no greater incentive for innovation and investment in network reliability than that already provided by the market."[9] Utilities, in contrast, have a different incentive for maximizing the reliability of the communications systems upon which they rely – namely, a mandate to serve the public interest through the safe, reliable, and efficient delivery of essential electric power to the public. In working to restore commercial power following storms or other events, utilities require greater certainty with respect to factors such as the adequacy of backup power than can be provided by the vagaries of market forces.

While some commercial operators imply that they have adequate backup power for their facilities, Southern is unsure whether adequate steps have in fact been taken. For example, one commercial operator states that it has "permanent generators and battery backup at all wireless switches and *many* cell sites."[10] Another commercial operator states that it "*typically* employs automatic power backup systems for its key network equipment" and that "the vast majority" of its cell sites "have alternative power supplies via battery backup and generators."[11] Terms such

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[7] / *NOI* at ¶¶ 17, 23 – 25.

[8] / *See, e.g.*, Comments of AT&T at 3 – 4; Comments of CenturyLink at 2 – 4; Comments of T-Mobile at 3 – 4; Comments of Verizon at 12; Comments of CTIA at 12 – 13.

[9] / Comments of AT&T at 12; *See also* Comments of CTIA at 1 – 2; Comments of CenturyLink at 3 – 4.

[10] / Comments of AT&T at 11 (emphasis added).

[11] / Comments of Verizon at 6 –7 (emphasis added).

as "many," "typically," and "vast majority" provide at best a general description of a network's anticipated level of reliability. In order to fulfill their public interest mandate, however, utilities need assurances that *all* centers through which their mission critical communications are routed – including cell sites – have sufficient backup power. In fact, *all* of the sites in Southern's own communications network have batteries with an absolute minimum capacity of eight hours, and every Southern communications site critical to electric operation has a generator with on-site fuel.

As illustrated by comments filed in this proceeding by commercial operators, it is no surprise that, in comparison to utility communications systems such as Southern's, commercial operations have less stringent backup capabilities given the economics involved. There is a cost to develop, implement, and maintain these backup capabilities, and it often does not make business sense for commercial operators to incur these costs.[12] Southern also acknowledges that commercial operators face other challenges to deploying adequate backup power capabilities to all of their cell sites, such as weight and space restrictions, zoning and environmental laws, and private lease agreements.[13] However, for Smart Grid and other mission-critical utility communications, such back-up capabilities are essential. As a task force for the National Security Telecommunications Advisory Committee ("NSTAC") concluded, "These backup capabilities, which are not economical or feasible for commercial networks, are required by utilities to ensure reliable communications in emergency."[14]

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[12] / *See, e.g.*, Comments of T-Mobile at 8 – 9.

[13] / *See* Comments of T-Mobile at 9 - 12; Comments of CTIA at 16 – 17.

[14] / NSTAC Report to the President on Telecommunications and Electric Power Interdependencies: People and Processes: Current State of Telecommunications and Electric Power Interdependencies, January 31, 2006, at 3-1 and 3-2, available at

Southern therefore appreciates the Commission's recognition of backup power as a leading factor affecting the reliability and continuity of communications networks and supports the Commission's ongoing efforts to address this issue. While Southern concedes that it might not be practical to mandate that commercial network operators install backup power at all facilities, Southern recommends that the Commission at least give consideration to adopting specific reporting requirements for commercial providers by which the Commission – and the public – can better understand which network providers take steps to incorporate adequate backup power. For example, the Commission could require carriers to report outages, exceeding a certain threshold period of time (*e.g.*, eight hours) that were caused by the lack of both commercial power and backup power to certain network components. Public availability of such information would help to inform the Commission's policies and possible need for regulation, establish best practices, and further the carriers' own position that well-informed consumers provide the best incentive for carriers to enhance their level of reliability.

B. Redundancy

In their comments, commercial operators describe in detail the various redundancies designed into their wireline and wireless networks in order to enhance reliability and assure continuity of service.[15] However, it remains unclear whether or to what extent these "designed" redundancies are actually being implemented and utilized to ensure the reliability and continuity of communications services, including essential emergency communications.

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http://www.ncs.gov/nstac/reports/2006/NSTAC_XXIX_Reports_082206.pdf (last viewed Aug. 26, 2011).

[15] / *See generally* Comments of AT&T; Comments of CenturyLink; Comments of T-Mobile; Comments of Verizon.

For example, the Maryland Public Service Commission ("PSC") recently expanded its investigation into problems with Verizon's provision of 9-1-1 service to include an incident where, for several hours on May 30, 2011, Verizon failed to provide Public Safety Answering Points ("PSAPs") in Maryland and Virginia with automatic number identification ("ANI") and automatic location information ("ALI") for 911 calls made from wireless devices and Voice over Internet Protocol ("VoIP") connections.[16] The problem was the result of a power outage at a single Verizon central office in New Jersey through which wireless and VoIP 911 calls from Maryland, Virginia, New Jersey, Pennsylvania, and Delaware were being routed.[17] Specifically, according to Verizon, a malfunctioning circuit breaker tripped in the central office and, after technicians ignored an alarm alerting them to the problem, the batteries in the central office drained over a twelve-hour period until they caused certain transport equipment to fail.[18]

As a result of this incident, it has been reported that Verizon now plans to route wireless and VoIP 911 calls through several offices rather than a single office.[19] However, Verizon has not explained why its initial operational plan for the handling of critical 911 calls from multiple states did not provide for redundancy in the first place. This incident also provides another example of the importance of adequate backup power for network facilities, especially for

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[16] / *In the Matter of the Commission's Investigation Into the Outages of Verizon Maryland Inc. 9-1-1 Network in Maryland*, Public Service Commission of Maryland Case No. 9265, Order No. 84181 (July 12, 2011).

[17] / *See* Theola Labbe-DeBose, *Maryland Regulators Expand Investigation Into Verizon's 911 Service*, WASHINGTON POST, Aug. 2, 2011, http://www.washingtonpost.com/local/maryland-regulators-expand-investigation-into-verizons-911-service/2011/06/22/gIQARER8nI_story_1.html (last viewed Aug. 26, 2011).

[18] / *Id.*

[19] / *Id.*

critical facilities such as central offices responsible for the handling of emergency 911 communications.[20]

C. Network Capacity and Congestion

Network reliability and continuity of service can also be affected by network overload and congestion. This problem was graphically illustrated just over one week ago on August 23, 2011, when the East Coast of the United States was affected by a 5.8 magnitude earthquake centered in Virginia. As the Commission is well aware, the earthquake resulted in significant disruption to commercial wireless service throughout the affected area, including the Washington and New York metropolitan regions. This disruption was not the result of any physical damage to network infrastructure (commercial operators in fact reported no indications of network damage), but rather the result of high call volumes immediately following the earthquake that overloaded operators' network capacity. The level of congestion was so severe that, according to the Deputy Chief of the New York Police Department, commercial "priority" services failed in New York City.[21] By contrast, the Washington Post reported, "Public safety responders in the

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[20] / In its comments, Verizon states that "all of Verizon's central offices have been *engineered* to have both battery reserves and generators with 72-hour fuel reserves." Comments of Verizon at 14 (emphasis added). This incident illustrates the difference between "engineering" and actually "equipping." The fact this particular central office failed after 12 hours means either that Verizon in fact did not have a generator with fuel at this central office – even though this central office was responsible for the handling of wireless and VoIP emergency 911 calls for multiple states – or that a design or other failure prevented the generator from keeping the central office operational.

[21] / Brian Hammond, *FCC Probing Post-Quake Problems With Wireless Calls to 911*, TELECOMMUNICATIONS REPORTS DAILY, Aug. 24, 2011.

District and Prince George's, Fairfax and Arlington Counties said they used radios to communicate with no problems and do not rely on cellphones."[22]

The large-scale service disruption that resulted from the August 23 earthquake is yet another example of why current levels of reliability and continuity of service for commercial networks are insufficient to meet electric utilities' mission-critical communications needs.

D. Timely Restoration of Failed Services

In the example of the August 23 earthquake discussed above, access to commercial wireless services did not return to "normal" until anywhere from 30 minutes to well over an hour after the earthquake occurred, despite the lack of any damage to network infrastructure. In other cases involving widespread damage, however, such as hurricanes and other large-scale emergencies, the restoration of failed commercial communications networks and services can take much longer. In the case of hurricanes, for example, it can often take several days, if not weeks, for commercial communications services to be fully restored and available. However, it is during these first days when utilities working to restore electric power to the public, including to the facilities of the commercial network operators themselves, have the greatest need for communications services.

Hurricane Irene has provided what is certainly the most recent example of the need for reliable and resilient communications to support electric utility restoration efforts following a major storm or other large-scale event. This storm first made landfall in the United States on August 27, 2011, and over the next two days moved up the East Coast and through New

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[22] / Cecilia Kang and Ylan Q. Mui, *Cellphone Service Falls Short After Earthquake*, WASHINGTON POST, Aug. 24, 2011, http://www.washingtonpost.com/business/economy/cellphone-service-falls-short-after-earthquake/2011/08/23/gIQAnl52ZJ_story.html (last viewed Aug. 26, 2011).

England, leaving significant damage in its wake. According to a tally compiled by the Associated Press, a total of 9.4 million customers across 13 states lost power as a result of Hurricane/Tropical Storm Irene.[23] By August 30, 2011, electric power had been restored to approximately 73 percent of these customers.[24]

Although commercial wireless infrastructure fared relatively well during Irene, the FCC nevertheless reported outages at 6,500 cell sites as of 3:00 PM on Monday, August 29, as a result of the storm.[25] This figure included 44 percent of the cell sites in Vermont, 35 percent of the cell sites in Connecticut, 31 percent of the cell sites in Rhode Island, and 25 percent of the cell sites in Virginia.[26] In addition, many cell sites still in operation were reported to be running on battery backup and thus could still fail, as noted by the Chief of the Commission's Public Safety and Homeland Security Bureau.[27] Because most of these downed cell sites are located in areas where power outages occurred, utility crews working to restore electric power necessarily rely on utility-owned private communications systems – which continue to function – to carry out their critical restoration efforts in a safe, coordinated, and efficient manner. Southern further notes

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[23] / *Irene's Impact on Power Companies and More Than 9 Million Customers*, ASSOCIATED PRESS, Aug. 30, 2011, http://www.washingtonpost.com/business/irenes-impact-on-power-companies-and-more-than-9-million-customers/2011/08/30/gIQA0AtHqJ_story.html (last viewed Aug. 31, 2011).

[24] / *Id*.

[25] / P. Goldstein, *FCC: 6,500 Cell Sites Down After Hurricane Irene*, FIERCEWIRELESS, Aug. 30, 2011, http://www.fiercewireless.com/story/fcc-6500-cell-sites-down-after-hurricane-irene/2011-08-30?utm_medium=nl&utm_source=internal (last viewed Aug. 31, 2011); *See also* Matt Hamblen, *Irene's Wrath Leaves 6,500 Cell Towers Out, FCC Says*, COMPUTERWORLD, Aug. 30, 2011, http://computerworld.co.nz/news.nsf/telecommunications/irenes-wrath-leaves-6500-cell-towers-out-fcc-says (last viewed Aug. 31, 2011).

[26] / *Id*.

[27] / Sara Yin, *Worst of Cell Phone Disruptions is Yet to Come*, PC MAGAZINE, Aug. 28, 2011, http://www.pcmag.com/article2/0,2817,2391983,00.asp (last viewed Aug. 31, 2011) (quoting Admiral James Barnett, Chief, Public Safety and Homeland Security Bureau).

that the recovery of much of the commercial communications infrastructure affected by Irene depends on utilities' ability to restore electric power to these sites.

As another example, CTIA presented in its initial comments in this proceeding a rosy description of the "speed" with which commercial wireless communications services were restored following Hurricane Katrina.[28] In support, CTIA pointed in particular to the singular success of SouthernLINC Wireless, which had 98 percent of its sites up and running within three days after Katrina made landfall.[29] CTIA failed to mention, however, that SouthernLINC Wireless is a wholly-owned subsidiary of Southern Company, and while SouthernLINC Wireless does provide commercial wireless services, its primary purpose is to maintain reliable mobile communications services for its electric operating company affiliates in direct support of their electric utility operations. Accordingly, SouthernLINC Wireless' system – unlike the networks and systems of other commercial wireless providers – was designed and constructed from the outset to rigorous utility-grade standards in order to meet the demanding operational requirements of electric utility communications systems. These design and construction standards were key to the survivability and swift recovery of the SouthernLINC Wireless network following Katrina and have yet to be met by other commercial communications providers.

The inability of commercial operators to restore failed services in a sufficiently timely manner also has a detrimental impact on utility operations even in "blue sky" conditions. For example, Oncor described in its comments a significant, week-long disruption in its daily

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[28] / Comments of CTIA at 7 – 8.

[29] / *Id*. at note 18.

operations "when a major, national telecommunications carrier's network failed."[30] Oncor also described several recent occasions where it lost mobile voice and data capabilities due to a commercial operator's unannounced 4G upgrade activities.[31] The records of other recent proceedings on utility communications and commercial network reliability contain further examples of "blue sky" failures of commercial networks that commercial operators were unable or unwilling to address in a timely manner, resulting in disruptions in essential electric utility operations.[32]

III. UTILITIES WILL CONTINUE TO RELY ON PRIVATE NETWORKS FOR CRITICAL COMMUNICATIONS NEEDS

Overall, Southern and other utilities have a wide variety of communications needs with widely varying requirements. Southern, like Oncor,[33] uses a variety of solutions including commercial communications services (for needs that do not have stringent reliability and availability requirements) and its own communications network (for needs with more stringent reliability and availability requirements). Southern agrees with Oncor that, before it can increase its use of and reliance on commercial networks in the future, Southern must have sufficient assurance that these commercial networks are sufficiently reliable and will provide a sufficient level, quality, and continuity of service.[34] Based on its review of the comments filed in this

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[30] / Comments of Oncor at 4.

[31] / *Id*.

[32] / *See, e.g.*, US Department of Energy, *In the Matter of Implementing the National Broadband Plan by Studying the Communications Requirements of Electric Utilities to Inform Federal Smart Grid Policy*, NBP RFI: Communications Requirements, 75 Fed. Reg. 26206, 26207 (May 11, 2010) ("DOE Utility Communications RFI"); Comments of Entergy Services, Inc. on the DOE Utility Communications RFI at 9 – 10.

[33] / *See* Comments of Oncor at 2.

[34] / Comments of Oncor at 2 and 8.

proceeding, that time has not yet come and Southern must therefore continue to rely on its own communications network for mission-critical communications services and applications for the foreseeable future.

Accordingly, Southern joins EEI and UTC in urging the Commission to ensure that utilities' communications options remain as broad as possible and to avoid taking any action in this or any other proceeding that may inhibit or restrict the ability of electric utilities to continue to rely on private networks for their critical communications needs.[35] Southern further joins UTC in urging the Commission to continue to promote the development and deployment of utility communications systems by providing utilities access to spectrum, while also continuing to promote improvements in the reliability and survivability of commercial communications networks.[36]

WHEREFORE, THE PREMISES CONSIDERED, Southern Company Services, Inc. respectfully requests the Commission to take action in this docket consistent with the views expressed herein.

Respectfully submitted,

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[35] / Comments of EEI at 3; Comments of UTC at 4.

[36] / Comments of UTC at 4.